Navigation and Ancillary Information Facility

What's Been Recently Added to SPICE?

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SPICE Toolkit N66

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- **Released in April 2017**
- **Implemented in Fortran 77, C, IDL and MATLAB**
- **Available at https://naif.jpl.nasa.gov/naif/toolkit.html**
- **Also available as alpha-test Java Native Interface (JNI) SPICE Toolkit at https://naif.jpl.nasa.gov/pub/naif/misc/JNISpice**
- **User-crafted Python interfaces to SPICE are expected to be updated for N66 Toolkit:**
  - **Andrew Annex: https://github.com/AndrewAnnex/SpiceyPy**
  - **Mark Showalter/Robert French: https://github.com/SETI/pds-tools**

Major New Capability

- **The tessellated plate portion of the Digital Shape Kernel (DSK)**
  - **More functionality, more thorough testing and more thorough documentation as compared to the previous (alpha-test) version**
  - **DSK capabilities are fully integrated into the SPICE Toolkit**

Major New Capability

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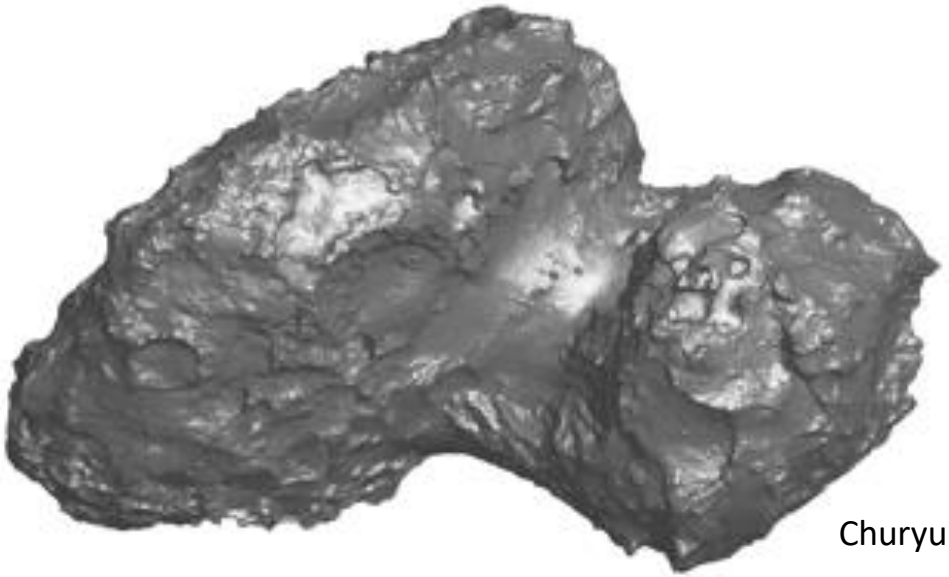
- **The tessellated plate portion of the Digital Shape Kernel (DSK)**
  - **Provides high precision shape models of irregularly shaped bodies**



Churyumov-Gerasimenko

Major New Capability

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- **The tessellated plate portion of the Digital Shape Kernel (DSK)**
  - **Provides a utility for producing a tessellated plate DSK from a number of popular shape model data formats (MKDSK)**
  - **Provides a utility for exporting DSK data into common text 3D shape formats (DSKEXP)**
  - **Please see “The SPICE Digital Shape Kernel (DSK) Subsystem.” poster by N. J. Bachman**

SPICE N66 Capabilities

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- **New routines as a result of new DSK capability:**
  - **LIMBPT, TERMPT, LATSRF, ILLUMF, SRFNRM**
- **Improved run-time performance in some cases**
- **Many new Icy and Mice wrappers**
- **The two-line element SPK type has been upgraded to use high-precision Vallado algorithms**

SPICE Tools

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- **Improved usability of the WebGeocalc Tool (WGC), a web-based Graphical User Interface to a SPICE geometry data:**
  - **Perform SPICE computations without the need to write a program**
  - **Provides access to a large collection of SPICE kernels**
  - **Now works with Digital Shape Kernel shape models**
  - **https://naif.jpl.nasa.gov/naif/webgeocalc.html**

SPICE Tools

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- **Some enhancements of the SPICE-aware Cosmographia, 3D mission trajectory visualization application:**
  - **https://naif.jpl.nasa.gov/naif/cosmographia.html**

SPICE Tools

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- **Please see “WebGeocalc and Cosmographia: Modern Tools to Access SPICE Archives” poster by Semenov B. V., Acton C. H., Bachman N. J., Ferguson E. W., Rose M. E., Wright E. D.**

SPICE Ongoing Developments

- **C++ implementation of the SPICE Toolkit**
  - **Object-oriented design**
  - **Multithreaded**
  - **Some performance improvements**

SPICE Ongoing Developments

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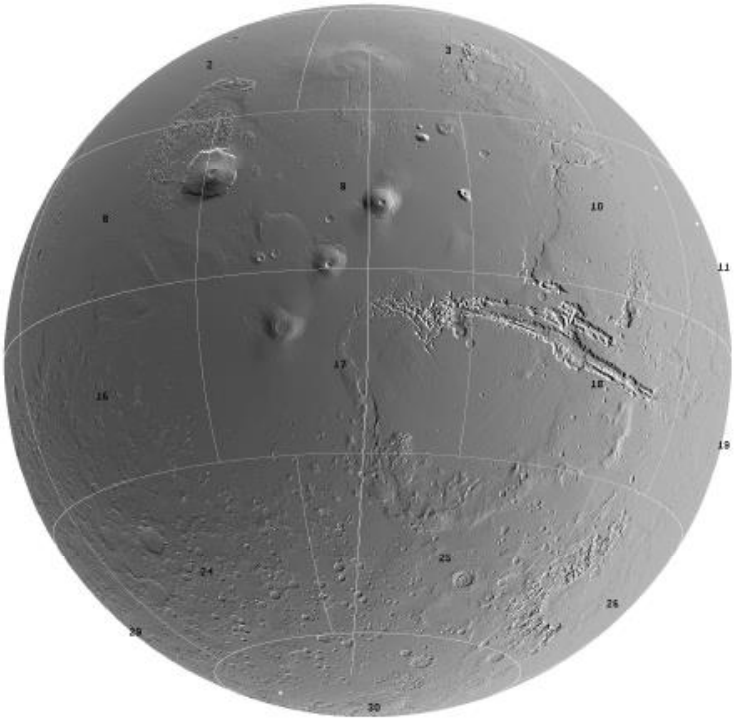
- **Completion of the digital elevation model (DEM) portion of the DSK subsystem**



SPICE Training

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- **Domestic SPICE Beginner's training class on November 7-9, 2017, near Pasadena**
  - **Watch NAIF's "Announcements" webpage for details: https://naif.jpl.nasa.gov/naif/announcements.html**